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| 09/871,752 | 06/01/2001 | Takeshi Omatsu | SAEGU82.001AUS | 1632 |

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| EXAMINER |
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SIEFKE, SAMUEL P

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| ART UNIT | PAPER NUMBER |
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1743

DATE MAILED: 10/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/871,752

Applicant(s)

OMATSU ET AL.

Examiner

Samuel P. Siefke

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status

This Office Action is in response to the RCE dated 7/31/06. Claims 1-2 and 4-7 are currently pending in the instant application.

Claim Rejections - 35 USC § 112

Claims **1-2 and 4-7** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The amended claims are directed to a method of measuring ozone concentration of 1000 ppm or higher. The Examiner contends that as claim 1 stands and the overcoat layer being formed on part of the surface of the color changing layer would render the ozone indicator useless because the overcoat layer would not be covering the whole color-changing layer and the uncovered (no overcoat) color-changing layer would be exposed to the entire 1000 ppm or higher ozone layer which the Applicant states in reference to the prior art "although the tests disclosed in these cited references were quite sensitive to low concentrations of ozone, they would be entirely useless for calculating ozone concentrations above 5 ppm". The Applicant states that the instant ozone indicator can accomplish this high concentration measurement because the overcoat layer serves to permit the detection of the recited

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high concentrations of ozone (page 6, 1st full paragraph. The color-changing layer is made with the same materials and chemicals as the prior art (Applicant agrees, see response by Applicant bottom page 6 1st full paragraph).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims **1-2 and 4-7** are rejected under 35 U.S.C. 102(b) as being anticipated by JP 11-140360.

JP '360 discloses an ozone indicator that comprises a substrate containing a color change layer comprised of an ozone sensitive ink, a non color change-layer formed at least part or whole of the color-change layer; disposing the ozone indicator in an ozone atmosphere (page 5, para. 1; page 6, para. 49); calculating a CT (ozone

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concentration x exposure time) from color difference (page 6, para. 49 and 51; page 7, para. 54). The color change layer comprises an anthraquinone dye and a cationic surfactant, such as a quaternary ammonium salt (alkyltrimethylammonium salt; abstract). It is inherent that in the detector described in the reference, the non-color changing layer must necessarily "overcoat" the color-changing layer, at least partially (abstract; page 2, para. 13). There is essentially no difference between the claimed invention and the teachings of the reference. JP '360 further discloses that the anthraquinone dye has at least one amino group species selected from the class consisting of primary and secondary amino groups (abstract; page 2, para 12). The quaternary ammonium salt is an alkyltrimethylammonium salt (abstract). The ozone sensitive ink further contains an extender (page 3, para. 17 and 19) or resinous binders (page 3, para. 17 and 18). The ozone sensitive ink further contains a color component which does not change color in an ozone atmosphere (page 4, para. 25). The color-unchanged layer is formed in a character, a pattern or a symbol (page 4, para. 32). Regarding the overcoat layer being made of a film-forming polymer, JP '360 discloses the overcoat layer comprising an ethylcellosolve (ethyl cellulose) as the main component in the layer (page 5, example 1) and includes a solvent when making the layer. It is noted that the applicant recites limitations on the manner in which the overcoat layer is made, such limitations are not attributed patentable weight in claims directed to a device. JP '360 further states that the color change layer and a non-color change layer can be made out of the same composition. Therefore the non-color changing layer is made of ethyl cellulose. In the applicant's specification on page 13,

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ethyl cellulose is a water soluble polymer that can be used for the overcoat layer.

Further, the Examiner states that the ozone indicator can be placed in a environment with over 1000 ppm ozone or higher and be able to determine that the concentration by exposure time has increase from initial exposure to final exposure time. This all depends on how fast the reaction takes place and how long the indicator is placed in the environment under investigation.

Claims **1-2 and 4-7** are rejected under 35 U.S.C. 102(e) as being anticipated by Omatsu (USPN 6,117,685).

Omatsu '685 discloses an ozone indicator that comprises a substrate containing a color change layer comprised of an ozone sensitive ink, a non color change-layer formed at least part or whole of the color-change layer; disposing the ozone indicator in an ozone atmosphere (col. 8, lines 21-23; col. 9, line 9); calculating a CT (ozone concentration x exposure time) from color difference (col. 4, lines 28-50; col. 7, lines 62-67). The color change layer comprises an anthraquinone dye and a cationic surfactant, such as a quaternary ammonium salt (col. 5, line 60-col. 6, line 41). It is inherent that in Omatsu the non-color changing layer must necessarily "overcoat" the color-changing layer, at least partially. There is essentially no difference between the claimed invention and the teachings of the reference. The anthraquinone dye has at least one amino group species selected from the class consisting of primary and secondary amino groups (col. 5, lines 53-58). The quaternary ammonium salt is an alkyltrimethylammonium salt (col. 6, lines 23-34). The ozone sensitive ink further

contains an extender (col. 6, lines 42-45 and lines 53-60) or resinous binders (col. 6, lines 42-52). It is also noted that the extender pigments can be used (col. 6, line 56). In example 5, silica gel is used as extender pigment in the ink composition (col. 9, lines 64-65). The overcoat layer does not contain a coloring agent (col. 3, lines 1-11). The color-unchanged layer is formed in a character, a pattern or a symbol (col. 7, lines 57-61). Regarding the overcoat layer being made of a film-forming polymer, Omatsu discloses the overcoat layer comprising an ethylcellosolve (ethyl cellulose) as the main component in the layer (col. 8, lines 48-50) and includes a solvent when making the layer. It is noted that the applicant recites limitations on the manner in which the overcoat layer is made, such limitations are not attributed patentable weight in claims directed to a device. Omatsu '685 further states that the color change layer and a non-color change layer can be made out of the same composition. Therefore the non-color changing layer is made of ethylcellulose. In the applicant's specification on page 13, ethyl cellulose is a water soluble polymer that can be used for the overcoat layer. Further, the Examiner states that the ozone indicator can be placed in a environment with over 1000 ppm ozone or higher and be able to determine that the concentration by exposure time has increase from initial exposure to final exposure time. This all depends on how fast the reaction takes place and how long the indicator is placed in the environment under investigation.

Claims **1-2 and 4-7** are rejected under 35 U.S.C. 102(e) as being anticipated by Omatsu (USPN 6,336,964).

Omatsu '964 discloses an ozone indicator that comprises a substrate containing a color change layer comprised of an ozone sensitive ink, a non color change-layer formed at least part or whole of the color-change layer; disposing the ozone indicator in an ozone atmosphere (col. 7, lines 65-67; col. 8, line 51); calculating a CT (ozone concentration x exposure time) from color difference (col. 4, lines 20-40; col. 7, lines 40-45). The color-change layer comprises an anthraquinone dye and a cationic surfactant, such as a quaternary ammonium salt. It is inherent that in Omatsu the non-color changing layer must necessarily "overcoat" the color-changing layer, at least partially. There is essentially no difference between the claimed invention and the teachings of the reference. The anthraquinone dye has at least one amino group species selected from the class consisting of primary and secondary amino groups (col. 5, lines 36-41). The quaternary ammonium salt is an alkyltrimethylammonium salt (col. 6, lines 16-18). The ozone sensitive ink further contains an extender (col. 6, lines 25-30 and lines 36-44) or resinous binders (col. 6, lines 29-35). It is also noted that the extender pigments can be used (col. 6, line 39). In example 5, silica gel is used as extender pigment in the ink composition (col. 9, lines 36-39). The overcoat layer does not contain a coloring agent (col. 3, lines 1-11). The color-unchanged layer is formed in a character, a pattern or a symbol (col. 7, lines 35-39). Regarding the overcoat layer being made of a film-forming polymer, Omatsu '964 discloses the overcoat layer comprising an ethylcellosolve (ethyl cellulose) as the main component in the layer (col. 8, lines 23-26) and includes a solvent when making the layer. It is noted that the applicant recites limitations on the manner in which the overcoat layer is made, such

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limitations are not attributed patentable weight in claims directed to a device. Omatsu '964 further states that the color change layer and a non-color change layer can be made out of the same composition. Therefore the non-color changing layer is made of ethylcellulose. In the applicant's specification on page 13, ethyl cellulose is a water soluble polymer that can be used for the overcoat layer. Further, the Examiner states that the ozone indicator can be placed in a environment with over 1000 ppm ozone or higher and be able to determine that the concentration by exposure time has increase from initial exposure to final exposure time. This all depends on how fast the reaction takes place and how long the indicator is placed in the environment under investigation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

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3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1,3-5 and 7 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP 11-140360.

JP '360 teaches an ozone detector with a substrate containing a color change layer and a non-color change layer, where at least part or whole of the color-change layer is exposed to ozone during used. The color change layer comprises an anthraquinone dye and a cationic surfactant, such as a quaternary ammonium salt (alkyltrimethylammonium salt). It is inherent that in the detector described in the reference, the non-color changing layer must necessarily "overcoat" the color-changing layer, at least partially. The only difference between the claimed invention and the teachings of the primary reference is the Applicant describes the indicator as containing an overcoat over the color-change layer containing the dye and the detergent.

Therefore, in view of the differences between the subject matter as a whole sought to be patented and the totality of the teachings of the prior art, as established above, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains, to follow the teachings of JP 411140360 and claim the same structure for the ozone detector as containing an overcoat over the ozone detector layer, because it is a conventional practice in any detection method or product to provide an inert overcoat on the sensitive layer until the test is done. It would have been obvious to one of ordinary skill in the art to protect the ozone-sensitive layer from exposure to the atmosphere, until the layer is

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ozone in the test area. With respect to the overcoat layer comprising a film-forming polymer (polyvinyl alcohol), it would have been obvious to one having an ordinary skill in the art at the time the invention was made to modify JP '360 to use a polymer composition as the overcoat layer because polymers provide excellent durability when exposed to the elements and also because it is known in the art to use polymers for overcoat layers. JP '960 teaches that ozone detection can occur in atmospheres containing as low as 0.03 ppm ozone on the provided indicator. It would have been obvious to one having an ordinary skill in the art to conclude that if the low end of detection is 0.03 ppm ozone then the indicator will provide detection above 3,000 ppm or higher. This can be accomplished by controlling detection sensibility, a discoloration rate, by the changing the class and the blending ratio of color of a component such as an anthraquinone system color (page 5, para. 37).

Response to Arguments

Applicant's arguments filed 7/31/06 have been fully considered but they are not persuasive. Regarding the overcoat layer being made of a film-forming polymer, the prior art discloses the overcoat layer comprising an ethylcellosolve (ethyl cellulose) as the main component in the layer (specific references can be seen in each rejection) and includes a solvent when making the layer. It is noted that the applicant recites limitations on the manner in which the overcoat layer is made, such limitations are not attributed patentable weight in claims directed to a device. The prior art further states

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that the color change layer and a non-color change layer can be made out of the same composition. Therefore the non-color changing layer is made of ethylcellulose. In the applicant's specification on page 13, ethyl cellulose is a water soluble polymer that can be used for the overcoat layer.

Regarding the detection of ozone concentration of 1000 ppm or higher it would have been obvious to one having an ordinary skill in the art to conclude that if the low end of detection is 0.03 ppm ozone then the indicator will provide detection above 3,000 ppm or higher. This can be accomplished by controlling detection sensibility, a discoloration rate, by the changing the class and the blending ratio of color of a component such as an anthraquinone system color, etc. (page 5, para. 37).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel P. Siefke whose telephone number is 571-272-1262. The examiner can normally be reached on M-F 7:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on 571-272-1700. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sam P. Siefke



October 11, 2006



Jill Warden
Supervisory Patent Examiner
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